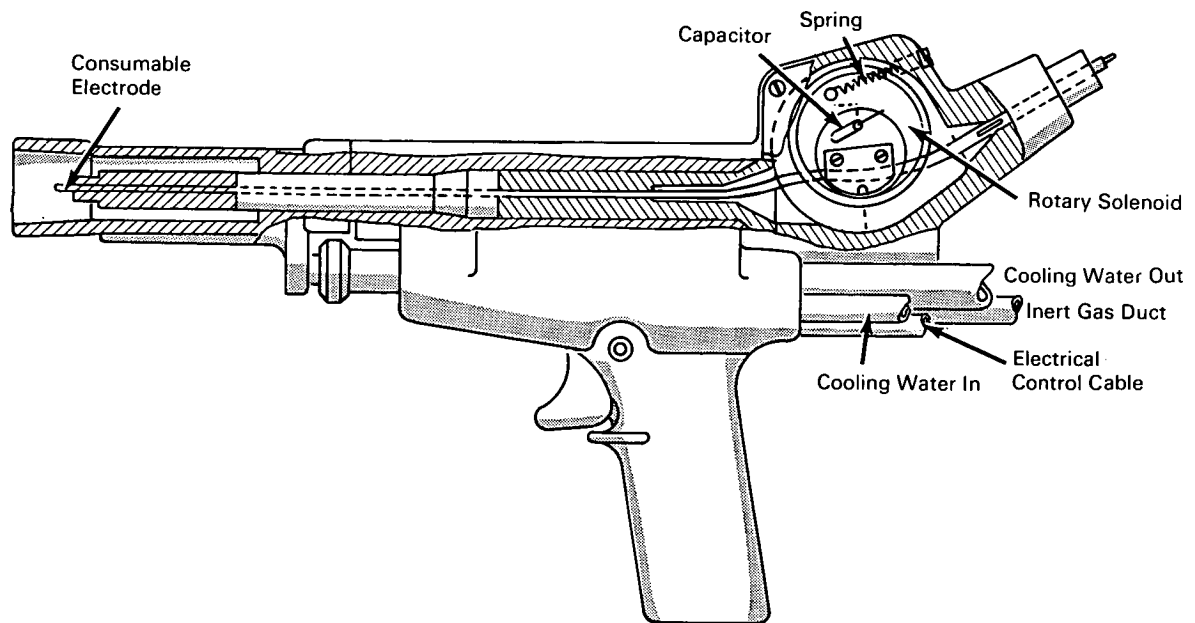


NASA TECH BRIEF



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Power Arc Welder Touch-Started with Consumable Electrode



The problem:

To provide a simple and inexpensive apparatus for touch starting of a power arc using a consumable electrode. In order to accomplish uniform spot welding in confined areas it is desirable that the apparatus be small and light enough to be hand-held during operation.

The solution:

A power arc welder in the form of a hand-held welding gun that touch-starts, retracts a consumable electrode a distance sufficient to create the desired arc, and then commences feeding of the consumable electrode at the rate required to form the intended bead or spot.

How it's done:

Initially, basic techniques are adhered to in that the workpiece and consumable electrode are connected to the terminals of a welding power source. As the welding gun with protruding consumable electrode is moved toward the workpiece, the electrode contacts the workpiece and strikes an arc. Simultaneously, a capacitor in the gun is charged and discharges to drive a rotary solenoid in the gun housing in a counterclockwise direction. A retracting plate on the solenoid withdraws the consumable electrode a sufficient distance (in one application 3/16 inch) to establish the desired arc. Upon completion of capacitor discharge, a counter polarity current is applied to the rotary solenoid causing it to rotate

(continued overleaf)

clockwise and drive the consumable electrode towards the workpiece at a rate that maintains the arc and achieves the desired weld penetration depth.

Notes:

1. This device is an excellent tool for achieving uniform spot welds repeatedly as to weld deposit and depth of penetration.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B66-10641

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: Joseph C. Jeannette
of Air Reduction Company,
subcontractor to the
Boeing Company
under contract to
Marshall Space Flight Center
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